ASTM A53 ERW steel pipe

ASTM A53 ERW steel pipe from TPMC is produced by high-frequency welding of steel strip, featuring a longitudinal weld seam, precise dimensions, and lightweight construction.
UL Listed and FM Approved, it provides reliable performance in water-based fire protection systems, including wet, dry, deluge, and preaction pipelines.
Additionally, our TPMC pipe excels in conveying steam, water, and air in industrial environments, while its excellent weldability supports general structural applications such as scaffolding, handrails, and framing.

- Certificate: UL Listed / FM Approved
- Standard: ASTM A53 Type E Grade B / UL 852 / NFPA 13 / NFPA 14
- Length: 6m / 5.8m / 11.8m / 12m / 20ft, etc.
- End: Plain: square cut
  Beveled: 37.5° angle per ASME B16.25
  Roll-grooved: per AWWA C606
  Threaded (NPT): per ASME B1.20.1
  Threaded (BSPT): per ISO 7-1 / BS 21
- Surface: FBE / polyester resin powder
  Water-based red or black paint
  Hot-dip galvanized / duplex coating
  Plastic lining (PE, UPVC, etc.)

Available sizes for Schedule 10 pipe

Outside diameter			Wall thickness		Weight	Test pressure	Ref. No.
NPS	DN	OD (mm)	Schedule No.	T (mm)	kg/m	MPa, min	
1/2"	15	21.3	SCH10	2.11	1.00	17.2	P0101-SCH10 (ISO)
3/4"	20	26.7	SCH10	2.11	1.28	17.2	P0102-SCH10 (ISO)
1"	25	33.4	SCH10	2.77	2.09	17.2	P0103-SCH10 (ISO)
1-1/4"	32	42.2	SCH10	2.77	2.69	17.2	P0104-SCH10 (ISO)
1-1/2"	40	48.3	SCH10	2.77	3.11	16.5	P0105-SCH10 (ISO)
2"	50	60.3	SCH10	2.77	3.93	13.2	P0106-SCH10 (ISO)
2-1/2"	65	73.0	SCH10	3.05	5.26	12.0	P0107-SCH10 (ISO)
3"	80	88.9	SCH10	3.05	6.46	9.9	P0108-SCH10 (ISO)
4"	100	114.3	SCH10	3.05	8.37	7.7	P0109-SCH10 (ISO)
5"	125	141.3	SCH10	3.40	11.56	6.9	P0110-SCH10 (ISO)
6"	150	168.3	SCH10	3.40	13.83	5.8	P0111-SCH10 (ISO)
8"	200	219.1	SCH10	3.76	19.97	4.9	P0112-SCH10 (ISO)
10"	250	273.0	SCH10	4.19	27.78	4.4	P0113-SCH10 (ISO)

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Outside diameter			Wall thickness		Weight	Test pressure	Ref. No.
NPS	DN	OD (mm)	Schedule No.	T (mm)	kg/m	MPa, min	
12"	300	323.8	SCH10	4.57	35.98	4.1	P0114-SCH10 (ISO)
14"	350	355.6	SCH10	6.35	54.69	5.2	P0115-SCH10 (ISO)
16"	400	406.4	SCH10	6.35	62.65	4.5	P0116-SCH10 (ISO)
18"	450	457.0	SCH10	6.35	70.57	4.0	P0117-SCH10 (ISO)
20"	500	508.0	SCH10	6.35	78.56	3.6	P0118-SCH10 (ISO)
24"	600	610.0	SCH10	6.35	94.53	3.0	P0119-SCH10 (ISO)

Note:

1. For NPS 1/2" to 12", SCH10 dimension and weight are not listed in ASTM A53-2024. TPMC references ASME B36.10-2022 for these values.
2. For NPS 1/2" to 12", SCH10 test pressure is not tabulated in ASTM A53-2024. TPMC calculates it using the formula P = 2St/D, with pressure not to exceed 2500 psi (17.2 MPa) for NPS 1/2" to 3", and 2800 psi (19.3 MPa) for NPS > 3", in accordance with the standard. Actual mill test pressures are documented in the MTC/MTR.

Available sizes for Schedule 40 pipe

Outside diameter			Wall thickness		Weight	Test pressure	Ref. No.
NPS	DN	OD (mm)	Schedule No.	T (mm)	kg/m	MPa, min	
1/2"	15	21.3	SCH40 (STD)	2.77	1.27	4.8	P0101-SCH40 (UL/FM)
3/4"	20	26.7	SCH40 (STD)	2.87	1.69	4.8	P0102-SCH40 (UL/FM)
1"	25	33.4	SCH40 (STD)	3.38	2.50	4.8	P0103-SCH40 (UL/FM)
1-1/4"	32	42.2	SCH40 (STD)	3.56	3.39	9.0	P0104-SCH40 (UL/FM)
1-1/2"	40	48.3	SCH40 (STD)	3.68	4.05	9.0	P0105-SCH40 (UL/FM)
2"	50	60.3	SCH40 (STD)	3.91	5.44	17.2	P0106-SCH40 (UL/FM)
2-1/2"	65	73.0	SCH40 (STD)	5.16	8.63	17.2	P0107-SCH40 (UL/FM)
3"	80	88.9	SCH40 (STD)	5.49	11.29	17.2	P0108-SCH40 (UL/FM)
4"	100	114.3	SCH40 (STD)	6.02	16.07	15.2	P0109-SCH40 (UL/FM)
5"	125	141.3	SCH40 (STD)	6.55	21.77	13.4	P0110-SCH40 (UL/FM)
6"	150	168.3	SCH40 (STD)	7.11	28.26	12.3	P0111-SCH40 (UL/FM)
8"	200	219.1	SCH40 (STD)	8.18	42.55	10.8	P0112-SCH40 (UL/FM)
10"	250	273.0	SCH40 (STD)	9.27	60.29	9.9	P0113-SCH40 (UL/FM)
12"	300	323.8	SCH40	10.31	79.70	9.2	P0114-SCH40 (UL)
14"	350	355.6	SCH40	11.13	94.55	9.0	P0115-SCH40 (ISO)
16"	400	406.4	SCH40	12.70	123.30	9.0	P0116-SCH40 (ISO)
18"	450	457.0	SCH40	14.27	155.87	9.0	P0117-SCH40 (ISO)
20"	500	508.0	SCH40	15.09	183.42	8.6	P0118-SCH40 (ISO)
24"	600	610.0	SCH40	17.48	255.24	8.3	P0119-SCH40 (ISO)

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Available sizes for Schedule 20 pipe

Outside diameter			Wall thickness		Weight	Test pressure	Ref. No.
NPS	DN	OD (mm)	Schedule No.	T (mm)	kg/m	MPa, min	
8"	200	219.1	SCH20	6.35	33.31	8.4	P0112-SCH20 (ISO)
10"	250	273.0	SCH20	6.35	41.75	6.8	P0113-SCH20 (ISO)
12"	300	323.8	SCH20	6.35	49.71	5.7	P0114-SCH20 (ISO)
14"	350	355.6	SCH20	7.92	67.90	6.5	P0115-SCH20 (ISO)
16"	400	406.4	SCH20	7.92	77.83	5.7	P0116-SCH20 (ISO)
18"	450	457.0	SCH20	7.92	87.75	5.0	P0117-SCH20 (ISO)
20"	500	508.0	SCH20	9.52	117.02	5.4	P0118-SCH20 (ISO)
24"	600	610.0	SCH20	9.52	140.88	4.5	P0119-SCH20 (ISO)

Available sizes for Schedule 30 pipe

Outside diameter			Wall thickness		Weight	Test pressure	Ref. No.
NPS	DN	OD (mm)	Schedule No.	T (mm)	kg/m	MPa, min	
8"	200	219.1	SCH30	7.04	36.31	9.3	P0112-SCH30 (UL)
10"	250	273.0	SCH30	7.80	51.01	8.3	P0113-SCH30 (UL)
12"	300	323.8	SCH30	8.38	65.18	7.5	P0114-SCH30 (ISO)
14"	350	355.6	SCH30	9.52	81.25	7.7	P0115-SCH30 (ISO)
16"	400	406.4	SCH30	9.52	93.17	6.8	P0116-SCH30 (ISO)
18"	450	457.0	SCH30	11.13	122.43	7.0	P0117-SCH30 (ISO)
20"	500	508.0	SCH30	12.70	155.12	7.2	P0118-SCH30 (ISO)
24"	600	610.0	SCH30	14.27	209.50	6.8	P0119-SCH30 (ISO)

Available sizes for standard (STD) pipe

Outside diameter			Wall thickness		Weight	Test pressure	Ref. No.
NPS	DN	OD (mm)	Schedule No.	T (mm)	kg/m	MPa, min	
12"	300	323.8	STD	9.52	73.78	8.5	P0114-STD (ISO)
14"	350	355.6	STD	9.52	81.25	7.7	P0115-STD (ISO)
16"	400	406.4	STD	9.52	93.17	6.8	P0116-STD (ISO)
18"	450	457.0	STD	9.52	105.10	6.1	P0117-STD (ISO)
20"	500	508.0	STD	9.52	117.02	5.4	P0118-STD (ISO)
24"	600	610.0	STD	9.52	140.88	4.5	P0119-STD (ISO)

Note: STD and SCH40 are identical for wall thickness up to NPS 10". For sizes larger than NPS 10", STD has a fixed wall thickness of 3/8" (9.52 mm).

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Chemical composition (%) per ASTM A53 Type E Grade B

C	Mn	P	S	Cu	Ni	Cr	Mo	V
≤ 0.30	≤ 1.20	≤ 0.05	≤ 0.045	≤ 0.40	≤ 0.40	≤ 0.40	≤ 0.15	≤ 0.08

Note:
1. Carbon-Manganese adjustment: For each reduction of 0.01% below the specified carbon maximum, an increase of 0.06% manganese above the specified maximum is permitted, up to a maximum of 1.65%.
2. Residual elements limit: The combined content of Cu, Ni, Cr, Mo, and V shall not exceed 1.00%.

Mechanical properties per ASTM A53 Type E Grade B

Tensile strength	Yield strength	Longitudinal elongation
≥ 60000 psi (415 MPa)	≥ 35000 psi (240 MPa)	20% ~ 30%

Note: Elongation conforms to the formula in Table 2 and the requirements of Table X4.1/X4.2 of ASTM A53-2024. As a reference, TPMC's typical longitudinal elongation values are ≥ 20 ~ 30%, meeting or exceeding the standard's requirements for all specified wall thicknesses.

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Standard requirements

· Post-weld heat treatment: The weld seam of Grade B ERW pipe shall be heat-treated after welding to a minimum of 1000°F (540°C), or processed equivalently, to ensure no untempered martensite remains.

· Bend test: NPS ≤ 2", cold bent 90° around a 12 x OD mandrel, no cracks.

· Flattening test: NPS ≥ 2-1/2", three-stage cold flattening: to 2/3 OD (weld ductility, no cracks); to 1/3 OD (base metal ductility, no cracks); continued to walls meeting (soundness, no prior lamination/unsoundness).

Hydrostatic test

· Each pipe is subjected to a hydrostatic test at the specified pressure, held for at least 5 seconds with no leakage.

· Test pressures meet specification minimums but do not exceed 2500 psi (17.2 MPa) for NPS ≤ 3" and 2800 psi (19.3 MPa) for larger sizes.

Hydrostatic test pressure formula

· The minimum hydrostatic test pressure is calculated using the formula

P = 2St/D

Where:

P = Minimum hydrostatic test pressure (psi or MPa).

S = Pipe wall stress = 60% of the specified minimum yield strength (psi or MPa).

t = Specified wall thickness (inch or mm).

D = Specified outside diameter (inch or mm).

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Nondestructive electric test (NDE)

· For NPS ≥ 2", the weld seam is 100% inspected via nondestructive electric test (NDE) in accordance with any of the following Practices:
ASTM E213 (ultrasonic),
ASTM E273 (weld ultrasonic),
ASTM E309 (eddy current),
ASTM E570 (flux leakage).

Dimensional tolerances

· Outside diameter: ±1/64" (0.4 mm) for NPS ≤ 1-1/2", ±1% for NPS ≥ 2".

· Wall thickness: Minimum not more than 12.5% under nominal (no upper limit).

· Cut length: +1/4" (6.4 mm) / -0" per ASTM A530 (for specified length).

· Weight: ±10%; measured per bundle for NPS ≤ 4", per individual length for NPS > 4".

Other quality assurance

· Straightness: Reasonably straight.

· Coating inspection: DFT and adhesion (see TPMC PA11-PA51).

· Marking: Legibly marked per standard (see TPMC PA71).

· Packaging: End protection, bundling, and shipping marks (see TPMC PA81).

· Test certificate: Issued by TPMC with full traceability to MTC/MTR.